VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

November 7, 2019

Re: Notice of Ex Parte Regarding *Unlicensed Use of the 6 GHz Band*, ET Docket No. 18-295 and *Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz*, GN Docket No. 17-183

Dear Ms. Dortch:

On November 6, 2019, representatives from the New York City ("NYC" or the "City") Mayor's Office of the Chief Technology Officer, Department of Information Technology and Telecommunications, New York Police Department ("NYPD"), and Fire Department of New York, met with Broadcom, Inc., Hewlett Packard Enterprise, New America, and Qualcomm Incorporated (collectively, the "Companies"). The Companies presented their proposals for unlicensed use in the 6 GHz band. As part of their presentation, the Companies referenced a LIDAR study (the "LIDAR Study"), which was conducted without the City's prior knowledge or participation and included information about fixed service ("FS") links licensed for public safety operations in NYC, and a multipath fading study (the "Multipath Fading Study") (collectively, the "Studies"). The Studies were previously submitted to the Federal Communications Commission ("FCC" or the "Commission") in its 6 GHz docket.[1] As indicated in our prior comments in this docket,[2] the City has a number of significant concerns with the proposals generally. Today's letter primarily focuses on some of our concerns with the Studies; the City may submit additional filings for the record as necessary and appropriate.

While we appreciate the Companies' efforts to analyze the potential interference impacts to incumbent public safety operations in the 6 GHz band, we do not concur that the Studies presented by the Companies to the Commission fully examined all potential interference cases or adequately characterized the potential negative impact that interference would cause to critical public safety communications. The City is particularly concerned about how the potential influx of low powered devices operating in this critical band would impact the ability to isolate interference, an already difficult task compounded by the sheer number of devices operating in New York City. We remain unconvinced that the Studies' recommendations sufficiently protect public safety FS microwave licensees in NYC, in part due to the analysis lacking consideration of the real-world environment in which these links operate, among other concerns, some of which are articulated below.

---

[1] *See* Letter from Harris, Wiltshire & Grannis LLP on behalf of Apple Inc., Broadcom Inc., Cisco Systems, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Marvell Semiconductor, Inc., and Qualcomm Incorporated, ET Docket No. 18-295; GN Docket 17-183 (July 31, 2019) (referencing and attaching the Lidar Study); *see also* Letter from Harris, Wiltshire & Grannis LLP on behalf of Apple Inc., Broadcom Inc., and Hewlett Packard Enterprise, ET Docket No. 18-295; GN Docket 17-183 (October 7, 2019) (referencing and attaching the Multipath Fading Study).

[2] *See* Comments of the City of New York, ET Docket No. 18-295; GN Docket No. 17-183 (February 15, 2019).

For example, NYC public safety agencies are concerned that the analysis, as detailed in the Studies: (1) assumes that all high-rise buildings are equipped with windows that provide 30 dB of Radio Frequency ("RF") isolation without providing any documentation in support; (2) equates thermal efficiency with RF isolation, also without providing any proof; (3) makes assumptions regarding the existing noise floor without providing any field measurement data; and (4) uses nebulous terms such as "typical" to justify conclusions without performing the field measurements required to arrive at accurate results.

Moreover, the Multipath Fading Study suggests that since multipath fading is worse during the summer and at night when public use of Wi-Fi would likely be minimal, it is irrelevant for public safety applications.[3] We disagree. Public safety incidents can occur at any time and often spark an increase in unlicensed Wi-Fi traffic by the public in the vicinity of the incident. Furthermore, summer months are peak months for both police and emergency medical services (EMS) activity.

We also disagree with the "worst month" metric used by the Companies to model public safety connectivity outages or degradation of service caused by RF interference. Public safety incidents are measured in minutes or hours, not months. Therefore, use of a "worst month" metric is inappropriate as a measure of the duration of interference in a public safety network, and also inconsistent with wireline service providers' own use of a "busy hour" metric to model traffic demands.

Regarding the environmental conditions for public safety operations, the more than 100 FS microwave links in the NYC metropolitan area were designed to operate in a noise-limited environment, not an interference-limited environment. They were not designed to detect interfering signals, nor are they frequency agile. They cannot simply retune to another frequency if, and when, interference occurs. The noise floor at sites in dense urban areas is typically higher than average. Furthermore, the elevated level of RF in a dense urban environment further decays the microwave receive Channel to Interference Ratio (Ec/Io), often resulting in throughput degradation and or loss of link connectivity.

In addition, the Multipath Fading Study suggests that extraordinary steps may be required to maintain existing licensed 6 GHz FS links at their current level of reliability with the addition of unlicensed users in the band, including incorporating network modifications, such as spatial diversity, frequency diversity or wireline fiber backup at critical sites, to mitigate RF interference.[4]

In order to support the reliable delivery of mission-critical voice and data in real-time, NYC public safety agencies deploy a sophisticated network of point-to-point microwave links. These public safety networks operating in this band are built to extremely high standards of reliability – 99.999 percent or 99.9999 percent availability with extremely low levels of latency requirements. Licensed spectrum offers public safety operations the reliability and protection from interference that their networks require. Public safety communications links must be held to the highest standard of reliability and must be continuously monitored to ensure their integrity. Due to the critical nature of these networks, public safety agencies cannot tolerate the slightest risk that these communications systems could be degraded. Diminished reliability can result in diminished situational awareness, which in turn can lead to degraded or delayed response-time. Such potentially deadly consequences are unacceptable when lives are at stake.

As stated in Broadcom's presentation to the City on November 6, 2019, "In the past, the FCC has issued requirements to stop using bands (this happened to protect weather radar in the 5 GHz band)." The City urges the Commission to not only take into consideration the lessons of the past (i.e., the Commission's

[3] *See* Multipath Fading Study at slides 5 and 6.

[4] *See id.* at slides 7, 20, 22 and 29.

actions to shut down the use of these bands for the protection of the impacted weather radar systems), but also consider current real-world interference incidents that continue to impair the weather radar systems due to co-channel interference from unlicensed Wi-Fi equipment in the 5600-5650 MHz frequency band, including one such incident of interference to an NYC airport radar system that occurred just last week.

Given the significant risk that the proposed unlicensed operations could pose to mission-critical networks – used to protect safety of life, health and property, and provide essential services to residents, visitors, businesses and government – the Commission must adopt more stringent interference protections, including for co-channel and adjacent channel operations. Technologies, once proven, can only be considered to mitigate the risk of interference by prior coordination of unlicensed operations. Not only are the proposed mitigation schemes for protecting public safety users from interferences theoretical in nature, the technologies are unproven, untested, and have not yet been built to mission critical standards.

Therefore, the City urges the Commission to take a prudent stance to ensure that licensed, mission-critical communications systems in the 6 GHz band can continue to operate without interference from the addition of unlicensed users in the band. This includes ensuring that the Commission's enforcement and compliance mechanisms are sufficient to resolve the potentially exponential increase in the number of interference complaints and to assign appropriate accountability for any intentional or unintentional interference caused by unlicensed users. The City looks forward to its continued work with the FCC to meet our nation's spectrum needs efficiently and effectively, without sacrificing the essential protections appropriately afforded to public safety and critical infrastructure operations.

Respectfully,

/s/

City of New York